

Application No. 09/683,659  
Reply to Office Action of April 13, 2005

RD-26623-1

### REMARKS

Applicant respectfully requests entry of this Amendment and reconsideration of the pending claims. This Amendment cancels claims 1-4, 6, 7, 9-17, 19, 20, 24, 26-31, 33-41, 43-46, 48, 49, 51-59, 61, 62, 66, 68-73, 75-80, and 95-128, and adds new claims 129-206. Accordingly, claims 1-128 are cancelled, and claim 129-206 are currently pending in the application.

Paragraph [0045] is replaced to update information regarding the referenced Patent Serial Number.

The rejections are addressed for the new claims to the extent that the new claims correspond to any cancelled claims. There are three independent claims – claims 129, 157 and 181. The independent claims are discussed, and then the dependent claims are addressed.

With reference to claim 129, the claim defines “a second capsule comprising a malleable metal and being operable to deform in response to the predetermined pressure, and the first capsule being disposed within the second capsule”. Support is found for this claim in at least Fig. 3. This multi-capsule system is not disclosed or suggested in the cited art references. But, the references cited will be addressed to the extent possible.

The Office Action states that Byrappa et al discloses an apparatus used as an autoclave (end of Page 2 of the Office Action). None of the various apparatuses disclosed in Byrappa et al have a multi-capsule system as defined in claim 129, and thus the reference does not anticipate.

Neither is claim 129 unpatentable over Byrappa et al. An analogy of the autoclaves of Byrappa et al to the invention defined in claim 129 would be incorrect. The outer, or second, “capsule” of an autoclave as disclosed by Byrappa et al would be the containing wall of the autoclave, should the autoclave wall be deformable at temperature and pressure, the autoclave would not only be unusable for its intended purpose (transfer pressure to the sample) but might be dangerous to those nearby. For both utility and

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safety, the autoclave walls should be non-deformable at operating temperature and pressure.

Further, the predetermined pressure as defined in claim 129 would be from the solvent contained in the chamber. While Applicant understands that it is a method step to form that pressure, Applicant submits that it is useful to look at the direction of force created by the pressure formation. The predetermined pressure in claim 129 comes from within the chamber, and the deformable second capsule is deformable in response to a pressure from within. By way of contrast, the autoclaves disclosed for use at pressures greater than about 5 kbar, for example the modified Bridgman on page 113, have plungers or the like to supply external pressure to the sample container. There is some discussion as to a pressure outward in Byrappa et al, but outward pressure would be against a liner, which is not a second or outer capsule. See, for example, page 113 ("The pressure inside the liner is counterbalanced with pressure between the liner outer wall and inner wall of the autoclave.").

At page 111, Byrappa et al discusses a technology advance that allowed decoupling entirely of temperature and (externally-applied) pressure. Decoupling of temperature and pressure reasonably means that the pressure is temperature independent. The pressure referred to in Byrappa et al would not be, then, the internal capsule pressure resulting from supercritical solvent. Logically, any capsules disclosed in Byrappa et al would not be configured to deform in response to such internal pressure, and would instead be configured to respond to external pressure, such as that supplied by the presses disclosed repeatedly in Byrappa et al. The invention as defined in claim 129 includes at least one structural limitation that is not disclosed in Byrappa et al, and there is no teaching or suggestion in Byrappa et al to modify any of the devices to produce the claimed invention. As such, Applicant submits that claim 129 is allowable over the cited art, and respectfully requests a notice to that effect.

Some of the cancelled claims were rejected under 35 USC § 103 over Byrappa et al in view of Purdy. Purdy does not disclose the invention as defined in claim 129, nor

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does the Office Action assert such. Neither does the combination of Purdy with Byrappa et al disclose the invention as defined in claim 129, or provide motivation to modify Byrappa et al to teach the same. Applicant submits that claim 129 is allowable over the cited references singly and in combination.

Independent claim 157 is allowable for at least the reasons stated above for claim 129, and further defines a "zero-stroke pressure device". Support for this claim is found in the specification at paragraph [0044]. The presses disclosed in Byrappa et al, conveniently listed in Table 3.1, do not anticipate or obviate the invention as defined in claim 157 – none of the devices capable of greater than 5kbar pressure are a "zero-stroke pressure device". Particularly, of the ones listed, only the Tuttle-Roy type and down are rated as having a characteristic of greater than 5 kbar at temperatures of greater than 750 degrees Celsius. What the presence of that list would indicated to one of ordinary skill, is that a press operable to provide significant pressure to the capsule is required to successfully operate the disclosed autoclaves. That is, Byrappa et al teaches the use of presses other than that defined in claim 157. For at least this additional reason, claim 157 should receive a notice of allowability.

Claim 181 includes the multi-capsule arrangement and a deformable capsule similar to claim 129, and is allowable for at least the same reasons as claim 129. Claim 181 also includes a zero-stroke pressure device similar to claim 157, and is allowable for at least the same reasons as claim 157. Applicant submits that claim 181 is allowable over the cited art, and respectfully requests notice to that effect.

The remaining claims depend from one of the allowable independent claims 129, 157 or 181, and are allowable at least for their dependency from an allowable claim.

With particular reference to new claims 143, 167, and 193 neither Byrappa et al nor Purdy, or the combination, discloses or teaches cold-welding as being possible or practical as a means for sealing. Thus, alone or in combination, the cited references do not render obvious a cold-weldable material. That is, no one of ordinary skill would be taught or motivated to a cold-weldable material based on the cited references. For at least

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this reason, claims 143, 167 and 193 are allowable.

Claim 159 specifies that the "predetermined temperature is at least about 550 degrees Celsius." It is noted that Purdy teaches only to "below about 550° C" (Col. 3, line 5) and it is an object of Purdy "to grow single crystal materials at *lower* temperatures" (Col. 2, lines 21-22, *emphasis added*). For at least claim 159, Purdy not only does not teach the claimed invention, but specifically teaches away. Although Byrappa et al may disclose autoclaves capable of temperatures above and below the claimed temperature range, the combination of references, for at least this point, would be improper, and Byrappa et al does not teach all of the limitations by itself.

Applicant submits that the claims 129-206 are allowable over the cited art, and respectfully requests that a notice to that effect be issued. Should the Examiner believe that anything further is needed to place the application in condition for allowance, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number below. Any additional fees for the accompanying response are hereby petitioned for, and the Director is authorized to charge such fees as may be required to Deposit Account 07-0868.

Respectfully submitted,



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